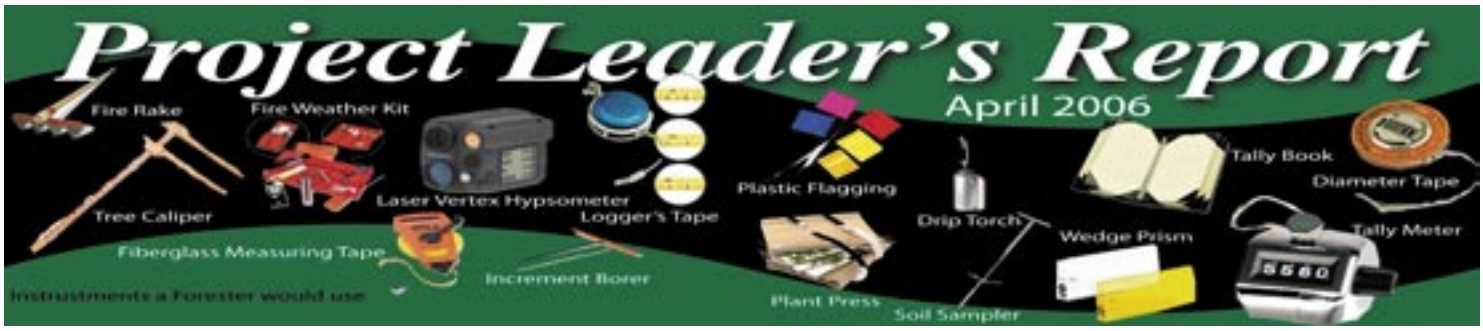

USDA Forest Service - Southern Research Station - 320 Green Street, Athens GA 30602 - http://www.srs.fs.usda.gov/disturbance

DISTURBANCE AND MANAGEMENT OF SOUTHERN ECOSYSTEMS

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Outreach Activities:

• Six organized groups totaling 140 people visited the Brender Demonstration Forest in April. These groups included a silviculture class from Abraham Baldwin Agriculture College, biology classes from Mercer University, and a class of 7th Graders from Hebrew Day School of Orlando, Florida. They visited several research studies, demonstrations and the Hitchiti Natural Area. The 7th Graders were primarily interested in prescribed fire and red cockaded woodpecker habitat.

• A total of 30 people came by the office for information and 43 people hiked the Hitchiti Interpretive Trail. Some of these visitors came from as far away as Glastonbury, England.

Boyd Edwards, Retired SRS-4104 conducts silviculture class on Brender Demonstation Forest.

Technology Transfer:

• Scott Goodrick and Gary Achtemeier assisted Bill Jackson, Air Quality Specialist for the Cherokee National Forest, in examining the meteorological conditions that led to a prescribed burn smoking-in Asheville, NC. The 1,800 acre fire consumed approximately 12 tons of fuel per acre, producing a dense smoke plume that settled over Asheville late in the afternoon. The smoke plume produced fine particulate concentrations (PM2.5) exceeding 120 micrograms per cubic meter, a level that can adversely affect the health of sensitive groups such as the elderly and asthmatics. Preliminary results from our DaySmoke model showed an excellent capability to capture both the magnitude and timing of the smoke concentrations in Asheville.

NOAA image of Brush Creek prescribed burn that smoked in Asheville.

• The American Meteorological Society, at the recent Fire and Forest Meteorology Conference in Canmore, BC, selected a paper by Deborah Hanley (Florida Division of Forestry), Phil Cunningham (Florida State University) and Scott Goodrick as a conference highlight. The paper "Interactions between a wildfire and a sea breeze front" reported on a study that combined radar observations of a smoke plume from a 25,000 acre wildfire on the Apalachicola National Forest with idealized computer simulations of the event. A brief synopsis of the paper can be found in the March 2006 issue of the Bulletin of the American Meteorological Society. An extended version of this paper was presented by Deborah Hanley at the Ninth Wildland Fire Safety Summit this past month in Pasadena.

• Tom Waldrop is continuing his work with the Ecological and Environmental Science Portfolio Team (Portfolio B), a component of the National Fire R&D Strategic Planning Area. The group is chaired by Ed Depuit of the Pacific Northwest Station and includes members from each Station and the Washington Office. The group developed a set of criteria that was used to evaluate priority research areas among the elements of the portfolio. Approximately 10 percent of all Forest Service scientists from across the country responded to the survey. Results will be shared with the Fire SPA. The group also collected information from each research unit about ongoing projects and broad

Technology Transfer:

work areas being conducted in Fire Effects on Ecosystem Components or Fire and Environment Interactions. A draft report is currently being reviewed by the team and will be submitted by May 15.

• Ken Outcalt will be attending a workshop for Cumulative Watershed Effects of Fuel Management in Atlanta in July. He has agreed to take the lead for a chapter on Fuels Management in the Subtropical Division – Coastal Plains.

•Tom Waldrop was invited to lecture to a graduate class in Fire Ecology at Clemson University. For one class, he presented results from his decade-long study of stand replacement prescribed fires for regenerating Table Mountain pine. During a laboratory period, the class visited Tom's Appalachian study site for the National Fire and Fire Surrogate Study.

• Ken Outcalt will be in Seattle, Washington, the first week in May, teaching the Fire Ecology of Southern Forest portion of the Technical Fire Management School held annually by Washington Institute for fire managers in federal agencies.

• Gary Achtemeier is working with Paul Schlobohm of BLM to arrange a national meeting for the Fire/Environment Working Team (FENWT) to be held October 31-November 2, in Athens. There will be a national FCAMMS meeting in conjunction with the FENWT Meeting. Pete Lahm, WO, requested that the unit

Science Highlight:

Does Charcoal Formation Increase Carbon Storage in Burned Forest Soils?

Ralph DiCosty

Can prescribed fire increase the amount of carbon stored in forest soils? An initial response based on intuition would be "No!", as fire obviously consumes the forest floor by combustion and sends forest floor detritus into the atmosphere as carbon dioxide gas. Data, however, paint a different picture. Our work at the Osceola National Forest in Florida shows that the top layer of mineral soil just below the forest floor (0–4 inch depth) contains substantially more carbon per acre under a four-year burn interval than under long-term fire exclusion (Figure 1). In the event of a wildfire, this topsoil carbon would probably survive whereas the forest floor carbon (top pair of bars in Figure 1) would not. Thus, over the long-term, the four-year burn interval plots may store as much or more carbon as the unburned plots!

This effect of storing more carbon under frequent light burning than under periodic severe wildfire is more than a curiosity, as it has clear implications for understanding carbon cycling in southern forests. But first, why is there more carbon in burned than unburned topsoil? The explanation may lie in the charcoal that is formed during prescribed fires. Charcoal contains more than 60% carbon by mass, is thought to be resistant to the attacks of soil animals and microbes, and may persist in soil for many years.

Examining our hypothesis of persistent charcoal in burned soils led us to work in the field of analytical soil chemistry. First we had to figure out how to detect and quantify charcoal but that not easy to do in soil because the color and density of charcoal are similar to other soil components. Another obstacle is that charcoal may exist as particles too small to feasibly count, even under a microscope. Indeed, no standard method currently exists for quantification of charcoal in soil. Many researchers in the international soil and environmental science communities are working to develop such a method. Some researchers have even speculated that "black carbon" (the most chemically resistant portion of charcoal) may account for some of the "missing carbon" in the global carbon budget.

In our Unit, we are investigating the utility of nitric acid to detect black carbon (BC). Our premise is that BC is more resistant to oxidation in nitric acid than are other forms of carbon (such as unburned wood). For a given soil type, our premise appears to hold, as the carbon in unburned soil disappears more rapidly in nitric acid than the carbon in burned soil (Figure 2). However, we have also noted that certain types of clay minerals interfere with the detection of BC by nitric acid. We are presently working to overcome this interference. Through this research, we hope to better understand the mechanisms by which soil carbon is stored in fire-managed forests in the southern U.S.

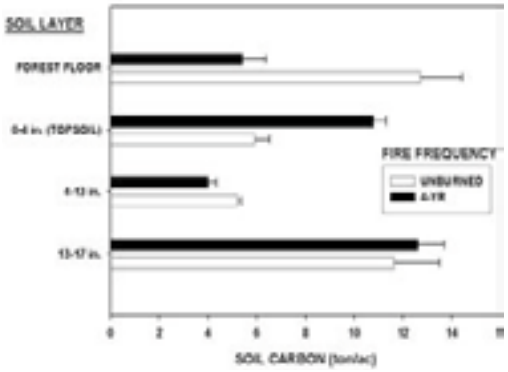


Figure 1. Soil carbon storage at the Osceola National Forest.

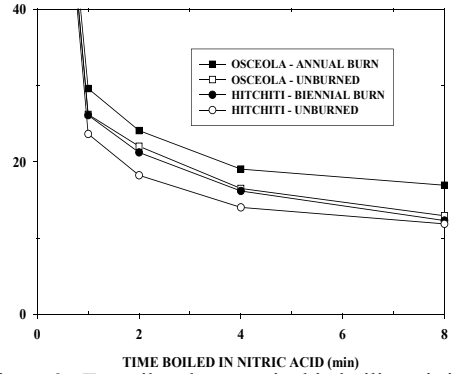


Figure 2. Topsoil carbon survival in boiling nitric acid as affected by burning frequency.

Meetings/Reports:

• Ken Outcalt and John Stanturf attended the Southern Research Station Management Team Meeting held in Durham, North Carolina. A new organizational structure was announced and subsequently elaborated upon. The new SRS organization is comprised of five science areas: Threats to Forest Health (Bruce Jewell, AD), Resource Management and Restoration (Nancy Herbert, AD), Natural Resource Technology and Social Science (John Kelley, AD), Forest Watershed Science (Greg Ruark, AD) and Natural Resource Inventory and Monitoring (Bill Burkman, Program Manager). Carol Whitlock recently was named AD for Science Delivery. Susan Fox, AD for Planning and Applications and Betty McGuire, AD for Administration, complete the Station Leadership Team along with Director Pete Roussopoulos. The number of separate Research Work Units was reduced from 29 to 15 and new Project Leaders named. The chart below summarizes the changes to the SRS Management Team. Ken Cordell was named Pioneering Research Scientist, freeing him of administrative duties, however he will continue as Acting Project Leader of SRS-4951.

• John Stanturf attended the Lower Mississippi Alluvial Valley Stakeholders Workshop held in Memphis, Tennessee, which was hosted by Deputy Chief Elizabeth Estill. About 60 people attended, mostly federal and state agency representatives. Estill said that what was needed was an over-arching vision of what successful restoration would mean for the Delta, and stressed the importance of maps to display what is, and what could be, from different perspectives. She was interested in the idea of research-demonstration sites and appointed Ted Leininger (Stoneville) and Skip Hyberg (Farm Services Agency in DC) to lead an effort to have something ready to put in the ground by the next planting season (January 2007). Estill mentioned efforts already underway to develop a business case for ecosystem services, including bioenergy, expressing interest in the potential uses of the cottonwood-red oak interplanting technique for biomass/bioenergy production. A conference is promised on "Science You Can Use" for January 2007.

• Tom Waldrop met with Steven Jeffers, Lisa Riley, and William Bridges, professors at Clemson University and collaborators on pathology research on the Piedmont and Appalachian sites of the National Fire and Fire Surrogate Study. They are beginning a new study on the Appalachian site to study the causes of delayed hardwood mortality that has been observed in several of Waldrop's studies in the region.

• Dr. Wayne Clatterbuck of the University of Tennessee, Knoxville, visited Tom Waldrop to discuss common interests in fire ecology. They discussed the future of fire-based education in the South and concerns about the limited opportunities for students to study fire ecology in the region. Collaborative efforts among universities and the Southern Research Station seem to be the only immediate solution.

Prominent physiographic and urban areas in and adjacent to the LMAV.

Science Area	AD or PM	Research Work Unit	General Area of Research
Threats to Forest Health	Bruce Jewell	RWU-4156 John Stanturf, PL	Fire and Disturbance
		RWU-4501 Kier Klepzig, PL	Invasives, Insects, and Diseases
		RWU-4851 Danny Lee, PL	Eastern Forest Threat Assessment Center
Resource Management and Restoration	Nancy Herbert	RWU-4151 Dave Loftis, PL	Hardwood Silviculture
		RWU-4152 Kris Connor, PL	Longleaf Pine
		RWU-4154 Jim Guldin, PL	Pine Silviculture
		RWU-4153 Dana Nelson, PL	Genetics
Forest Watershed Science	Greg Ruark	RWU-4351 Jim Vose, PL	Eastern Watersheds
		RWU-4155 Ted Leininger, PL	Bottomland Hardwoods
		RWU-4352 Michele Schoeneberger, PL	Riparian Zones
Natural Resource Technology and Social Science	John Kelly	RWU-4701 Les Groom, PL	Forest Products
		RWU-4702 Bob Rummer, PL	Forest Operations
		RWU-4802 Dave Wear, PL	Economics
		RWU-4951 Vacant (Ken Cordell, Acting PL)	Urban Ecosystems and Recreation
Natural Resource Inventory and Monitoring	Bill Burkman	RWU-4801 Bill Burkman, PM	Forest Inventory and Analysis

Partnerships:

• John Stanturf accepted an invitation to serve as Deputy of the IUFRO Subgroup 3.05.02, Analysis and Management of Site Impacts. The focus of the subgroup is impacts caused by forest operations to ecosystem structures (stands, soils) and processes (growth, mortality, nutrient and water cycling, etc.), analysis and monitoring procedures for impact inspection, and environmental quality standards.

• Mac Callaham met with Ph.D. student Michael Strickland (UGA Ecology) about potential collaborations on the Calhoun Experimental Forest in South Carolina. Mac has also agreed to serve on Michael's Dissertation Advisory Committee.

Funding:

• Alex Clark received continuing Agenda 2020 funding of $115,710 for projects at North Carolina State University and the University of Florida.

Personnel News:

• The excellent work of the unit was recognized by presentation of four Director's Awards to unit scientists at the Southern Research Station Management Team meeting in Durham. Awardees are nominated for Chief's Awards in the same categories.

• Director Pete Roussopoulos presented the Natural Resource Stewardship Award to Kenneth Outcalt for innovative approaches to stewardship of the unique longleaf pine ecosystem by restoring fire disturbance, reducing the risk of wildfire while protecting biodiversity.

• The Global Stewardship Award was presented to John Stanturf for leadership and sustained effort to advance the global mission of the Forest Service as a leader in restoration science. Stanturf also received the Distinguished Science Award for leadership in developing methods for restoration of temperate forests and for developing innovative methods to rehabilitate and restore southern forest ecosystems.

Personnel News:

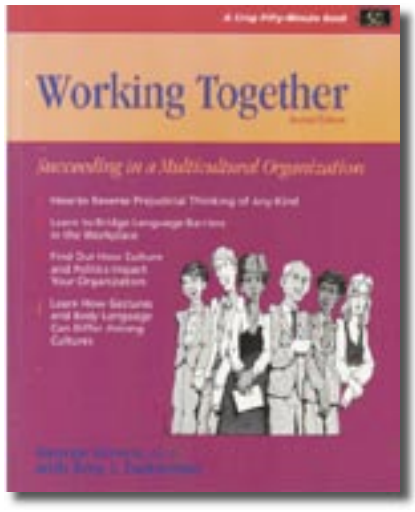
• Tom Waldrop was presented with the Natural Resource Leadership Award for leadership in restoring the health and diversity of Table Mountain Pine ecosystems by diagnosing the decline and developing effective and safe alternatives to stand-replacing fires.

John Stanturf- Global Stewardship and Distinguished Science Awards.

Ken Outcalt - Natural Resource Stewardship Award

Tom Waldrop- Natural Resource Leadership Award

Personnel News:



• John Stanturf attended the first annual USDA Civil Rights Conference "Working Together Works," held at the University of Maryland Conference Center in Adelphi. Speakers included Secretary Johanns and Linda Springer, Director of the Office of Personnel Management.

• Kim Crider passed her comprehensive examinations on April 28th at the University of Montana, moving her to candidacy for her doctorate. She will continue working on her Ph.D. project in the field this summer, looking at the effects of native ant predation on biological control agents and the potential for cascading effects on the population dynamics of a noxious weed in northwest Montana.

• Adam Coates, an M.S. student at Clemson University, passed his thesis defense on April 4 and will graduate on May 12. Adam worked on soil physical and chemical responses to fuel reduction treatments in the Piedmont and Southern Appalachian Mountains. His work was a component of the National Fire and Fire Surrogate (NFFS) Study and was funded through the Joint Fire Science Program and the National Fire Plan. Tom Waldrop served as research advisor on the graduate committee. Adam conducted his work on both the Piedmont and Appalachian NFFS sites. A publication on the work has already been drafted to be submitted to the Journal of the Science of the Total Environment. Adam and his wife are packing

Personnel News:

up to move to Syracuse, NY where they will continue their graduate education.

• Congratulations to Kathryn Smith and Rua Mordecai-Stob on their wedding on March 14th.

Kathryn Smith and Rua Mordecai-Stob at their wedding in Palm Beach, Florida.

News from Around the Region:

• Collaborator and former SRS scientist Tim Rials is the 2006 Mississippi State University College of Forest Resources Alumnus of the Year. Rials is professor and director of the Tennessee Forest Products Center, a component of the University of Tennessee. Rials received his bachelor of science in forestry from Mississippi State University in 1980. He received his master's and doctoral degrees in wood science and technology from Virginia Polytechnic Institute and State University.

• Plantations are in the news in many regions of the world, receiving both positive and negative press. On the positive side, FAO recently reported that the Asia-Pacific leads the world in forest plantation development, reversing the trend of the 1990s toward a net loss of forest cover. From a net loss of 1.3 million hectares per year in the 1990s, Asia-Pacific boasted a net gain of more than 600,000 hectares per year between 2000 and 2005, marking it – along with Europe – as the world's only regions with a sustained increase in forests. The gain was primarily due to an increase in forest plantations. The Asia-Pacific region, however, still has just 0.2 hectares of forest per person – the lowest amount per capita in the world – compared to 1.1 hectares per person outside of Asia and the Pacific. In Africa, a new partnership in Cameroon between the National Forestry Development Agency (ANAFOR) and the World Conservation Union (IUCN) will support all efforts on the sustainable development and management of forest plantations in Cameroon. The collaboration will essentially cover four areas: sustainable management of community and private forestry plantations, capacity building, research and mobilization of finances, and communication.
On the negative side, the World Rainforest Movement (WRM) has accused the Forest Stewardship Council (FSC) of "greenwashing" monoculture tree plantations in Uruguay. The WRM charges in a recent report that large scale monoculture tree plantations installed in Uruguay should never have been certified by FSC because they are "environmentally inappropriate, socially damaging and economically unviable." Uruguay is the target of an international dispute with neighboring Argentina. According to Reuters, The World Bank will withhold approval of about $400 million in funding for two Uruguayan pulp mills that have been fiercely opposed by Argentina, which says they will damage its environment. Finland's Metsa-Botnia and Spain's Ence are building the two mills along the Uruguay River, which divides Uruguay and Argentina and is managed bilaterally. Argentine protests have blocked border crossings in the months-long dispute. The World Bank and the government of Uruguay have agreed to conduct additional environmental studies. In China, Eucalyptus plantations are blamed for worsening drought in Guangdong province. According to China Daily, an investigation has been launched to determine whether eucalyptus trees have done damage to the environment. The city government of Yunfu enforced a ban on planting eucalyptus a month ago and Zengcheng, a suburban city of Guangzhou, has decided to follow this move. Guangdong started importing eucalyptus from Australia, Indonesia and the Philippines in the 1980s. Currently, the province has an area of more than 677,300 hectares of eucalyptus trees.

News from Around the Region:

• International Paper continues to divest of its timberlands as it signed a deal with Lyme Timber Co. to sell about 275,000 acres forest land within New York's Adirondack State Park for about $137 million. The $500 an acre price tag was substantially higher than the $227 per acre price for land sold in Maine and New Hampshire in 2004, and may reflect the value of a conservation agreement with the state that allows the land to remain as working timberland, according to Deutsche Bank analyst Mark Wilde (quoted by Reuters). Lyme Timber will provide wood fiber to IP's paper mill at Ticonderoga, New York, for 20 years.

• The Forest Service was a sponsor of the American Planning Association (APA) 2006 National Conference that was held April 22-26 in San Antonio, TX. APA represents 37,000 planners, officials, and citizens involved with urban and rural planning issues. Elizabeth Estill, Forest Service Deputy Chief and Coordinator for the Lower Mississippi Alluvial Valley Restoration Project, participated on a panel that discussed how federal, state, and local partnerships are working to reduce land-based sources of pollution in rural and urban watersheds of the Mississippi River Basin. Other panelists were the Gulf of Mexico Program Director for the Environmental Protection Agency, and the Mid-America Regional Council's Director of Environmental Programs.

Typical picture of Zhanjiang

FY 2006 Publications (* denotes new publication this month)
Refereed Journals and Book Chapters

Frank, J.H., Foltz, J.L., and Almquist, D.T. 2005. The female of Oxybleptes meridionalis (Coleoptera: Staphylinidae: Staphylininae) and range extension for Oxybleptes. Florida Entomologist 88(2):199-200. (Unit funded under agreement #02-1A-11330136-030; funding source Joint Fire Sciences Program)

Jordan, L., Daniels, R.F., **Clark, A. III**, He, R. 2005. Multilevel nonlinear mixed-effects models for the modeling of earlywood and latewood microfibril angle. *Forest Science* 51(4): 357-371.

Liu, Y.-Q. 2005. Atmospheric response and feedback to radiative forcing from biomass burning in tropical South America. *Agricultural and Forest Meteorology.* 133, 40-53.

Liu, Y.-Q. 2005. Land breeze and thermals: A scale threshold to distinguish their effects. *Advances in Atmospheric Science*, Vol. 22, No. 6, 889-902

Liu, Y.-Q., Fu, R., Dickinson, R. 2005. Smoke aerosols altering South American monsoon. *Bulletin American Meteorological Society* 86(8): 1062-1063.

Liu, Y.-Q., Avissar, R. 2005. Modeling of the global water cycle - analytical models. In M. G. Anderson, Ed. *Encyclopedia of Hydrological Sciences*. John Wiley & Sons, pp. 3456.

Logan, S.R., **Edwards, M.B.**, Shiver, B.D. 2005. Survival and growth of seed trees 20 years after a natural regeneration cut in the Piedmont of Georgia. *Southern Journal of Applied Forestry* 29(4): 173-178.

Moser, W.K., **Wade, D.D**. 2005. Fire exclusion as a disturbance in the temperate forests of the USA: Examples from longleaf pine forests. Scandinavian Journal of Forest Research 20 (Suppl 6): 17-26.

Qu, J., Hao, X., Yang, R., Sommers, W., Dasgupta, S., Bhoi, S., Kafatos, M., **Liu, Y.-Q., Achtemeier, G**., Riebau, A.R., Coronado, P. 2005. Bridging Earth observations: remote sensing measurements, fire modeling, and air quality decision support system in the eastern United States. *Earth Observation Magazine* 14 (6).

Rall, A.E. 2004. Effects of longleaf pine management practices on the herpetofauna of south Alabama. M.S. Thesis, Auburn University. 61p. (Unit funded under agreement #02-1A-11330136-030; funding source Joint Fire Sciences Program)

Reilly, M.J., Wimberly, M.C., Newell, C.L. 2006. Wildfire effects on plant species richness at multiple spatial scales in forest communities of the southern Appalachians. *Journal of Ecology* 94: 118-130.

Reitz, R. 2005. Forests and people: The symbiotic relationship. Pp. 89-93 *In* American Perspectives on the Wildland/Urban Interface. The National Wildland/Urban Interface Fire Program; 113 p.

Rhy, Soung-Ryoul, Chen, Jiquan, Crow, Thomas R., **Saunders, Sari.** C. 2004. Available fuel dynamics in nine contrasting forest ecosystems in North America. *Environmental Management* Vol. 33, Supplement 1, pp. 87–107.

Rompre, Ghilain. 2003. Successful nesting of the sharp-shinned hawk (Accipiter striatus) in a longleaf pine stand in southern Alabama. Alabama Birdlife 49(1):10-13. (Unit funded under agreement #02-1A-11330136-030; funding source Joint Fire Sciences Program)

Saunders, S.C., J. Chen, T.D. Drummer, E.J. Gustafson, and K.D. Brosofske. 2005. Identifying scales of pattern in ecological data: A comparison of lacunarity, spectral and wavelet analyses. *Ecological Complexity* 2: 87-105.

Schulte, Lisa A. and Mladenoff, David J. 2005. Severe wind and fire regimes in northern forests: Historical variability at the regional scale. *Ecology*, 86(2): 431–445.

Sharp, N.W. 2005. Demography of small mammal populations in longleaf pine undergoing restoration. M.S. Thesis, Auburn University, 84p. (Unit funded under agreement #02-1A-11330136-030; funding source Joint Fire Sciences Program)

Varner, J.M. III, Gordon, D.R., Putz, F.E., Hiers, J.K. 2005. Restoring fire to long unburned *Pinus palustris* ecosystems: Novel fire effects and consequences for long-unburned ecosystems. *Restoration Ecology* 13(3): 536-544. (Unit funded under agreement #02-1A-11330136-030; funding source Joint Fire Sciences Program)

Proceedings and Reports

Brockway, D., **Outcalt, K**., Waites, J., Loewenstein, E. 2006. Comparative Analysis of Forest Reproduction Methods for Sustainable Management of Longleaf Pine Forest Ecosystems: Goethe State Forest. Establishment Report on file at the Andrews Forestry Sciences Laboratory, Auburn University, AL. 49pp.

Brockway, D., **Outcalt, K**., Waites, J., Loewenstein, E. 2006. Comparative Analysis of Forest Reproduction Techniques for Sustainable Management of Longleaf Pine Forest Ecosystems: Blackwater River State Forest. Establishment Report on file at the Andrews Forestry Sciences Laboratory, Auburn University, AL. 43pp.

Brockway, D.G., **Outcalt, K.W.**, Tomczak, D.J., Johnson, E.E. 2005. Restoration of longleaf ecosystems. USDA Forest Service Southern Research Station General Technical Report SRS-83, Asheville, NC; 34 pp.

Cleland, David, Crow, Thomas, Saunders, Sari, Maclean, Ann, Dickmann, Donald. 2005. Characterizing historic and contemporary fire regimes in the Lake States. Final Report to the Joint Fire Science Program. 81 pp.

Kennard, D, Fowler, C. T., Hubbard, W. and Rauscher, M. 2005. The Encyclopedia of Southern Fire Science. In: Kush, J.S., comp., *Longleaf Pine: Making Dollars and Sense*, Proceedings Fifth Longleaf Alliance Regional Conference, 2004 October 12-15, Hattiesburg, MS, Longleaf Alliance Report No. 8: 97-100. (SRS-4104-6009)

Liu, Y.-Q. 2005. Spatial relationships between SST and U.S. Wildfires, *Proceedings of the Sixth Fire and Forest Meteorology Symposium*, 25-27 October 2005, Canmore, AB, Canada, Paper 6.2, P1-6 (available in CD). http://ams.confex.com/ams/6FireJoint/techprogram/programexpanded_302.htm

Outcalt, K.W. 2005. Restoring structure and composition of longleaf pine ecosystems of the Gulf Coastal Plain. In: Kush, J.S., comp., *Longleaf Pine: Making Dollars and Sense,* Proceedings Fifth Longleaf Alliance Regional Conference, 2004 October 12-15, Hattiesburg, MS, Longleaf Alliance Report No. 8: 97-100. (SRS-4104-6009)

Outcalt, K.W. 2005. National Fire and Fire Surrogate Study, 7th Annual SMIC Meeting and Field Trip. October 2005. Solon Dixon Forestry and Education Center, Andalusia, AL [Report]

Outcalt, K.W. 2005. National Fire and Fire Surrogate Study, Fuels Treatment Workshop and Field Trip. October 2005. Solon Dixon Forestry and Education Center, Andalusia, AL [Report]

Schoenholtz, S.H., **Stanturf, J.A**., Allen, J.A., Schweitzer, C.J. 2005. Afforestation of agricultural lands in the Lower Mississippi Alluvial Valley: The state of our understanding. pp. 413-432. In L.H. Fredrickson, S.L. King, and R. M. Kaminski, eds. *Ecology and Management of Bottomland Hardwood Systems: The State of our Understanding.* University of Missouri-Columbia. Gaylord Memorial Laboratory Special Publication No. 10. Puxico, MO.

Stanturf, J.A. 2006. What is forest restoration? P. 23-36 in Proceedings of the 2006 Annual Meeting of the Korean Forest Society, Seoul National University, Seoul, Republic of Korea.

Other Publications

Goodrick, S. Stanturf, J., Sullivan, F., Outcalt, P., Gillmore, G., McCracken, R., Mundy, E. 2005. Biennial Southern Silvicultural Research Conference Proceedings 1-12, 1980-2003. Archive and bibliography on CD-ROM.

Outcalt, K.W. 2005. Prescribed Burning Research in the Piedmont of Georgia. Demonstration Forest Project Hitchiti Experiment Forest, Jarrell, GA. [3-Panel Outdoor Display]

Outcalt, K.W. 2005. Prescribed Burning Research on the Hitchiti Experimental Forest. Demonstration Forest Project Hitchiti Experiment Forest, Jarrell, GA. [Information Card]

Outcalt, K.W. 2005. Long-term Dormant-Season Burning Study Located in the Palmetto/Gallberry Fuel Complex. Demonstration Forest Project Osecola National Forest, Olustee, FL. [Outdoor Display]

Outcalt, K.W. 2005. We can't keep fire out of these woods. We can only choose between prescribed burns or wildfire. Demonstration Forest Project Osecola National Forest, Olustee, FL. [Outdoor Display]

Outcalt, K.W. 2005. We can't keep fire out of these woods. We can only choose between prescribed burns or wildfire. Demonstration Forest Project Osecola National Forest, Olustee, FL. [Information Card]

Outcalt, K.W. 2005. Fire and Fire Surrogate Study in the Gulf Coastal Plain. October 2005 Solon Dixon Forestry and Education Center, Andalusia, AL [Bookmark]

Outcalt, K.W. 2005. Fire and Fire Surrogate Study in theSouthern Coastal Plain. October 2005 Myakka River State Park, Sarasota, FL [Bookmark]

Waldrop, T. 2006. Ecological impacts of fuel reduction: presentations at a workshop held 24-25 January 2006 in Asheville, North Carolina. CD-ROM available from the RWU-4104, Athens, GA.

Abstracts and Posters

Achtemeier, Gary L., and Luke Naeher. 2005. Measurements of ground-level PM2.5 concentrations downwind from Southern prescribed burns. Sixth Symposium on Fire & Forest Meteorology and the 19th Interior West Fire Council Meeting, October 25-27, Canmore, Alberta, Canada. Sponsored by the American Meteorological Society [Poster]

Achtemeier, Gary L. 2005. On plume rise – matching Daysmoke with Briggs Equations for industrial stacks. Sixth Symposium on Fire & Forest Meteorology and the 19th Interior West Fire Council Meeting, October 25-27, Canmore, Alberta, Canada. Sponsored by the American Meteorological Society [Abstract]

Alahari, N., Sublette, K., Jennings, E., Thoma, G., Wolf, D., Duncan, K., **Callaham, M. Jr.**, Todd, T. 2005. Earthworms as ecoengineers in the restoration of oil and brine impacted soils following remediation. International Petroleum Environmental Conference, November 2005, Houston, Texas [Abstract]

Callaham, M.A., Richter, D.D., Hofmockel, M. 2005 Long-term land use effects on soil invertebrate communities in Southern Piedmont soils. Ecological Society of America annual meeting, 8-11 August, Montréal, Canada [Poster]

Callaham, M.A., Jr., Stanturf, J.A., Boerner, R.E.J. 2005. Viewing ecosystem restoration through the glass of soil ecology: Making use of the illuminated ped. Symposium Honoring Dr. David C. Coleman, 28-29 October, Athens, Georgia [Poster]

Callaham, M.A. Jr., Todd, T.C., Kitchen, D.J., Blair, J.M., Williams, M.A., Rice, C.W. 2005. Long-term studies on soils and soil biology in a Kansas tallgrass prairie: Stories that only time can tell. Invited symposium presentation at the Soil Science Society of America Annual Meeting, 6-10 November, Salt Lake City, Utah [Abstract]

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Canfield, J.M., Linn, R, Cunningham, P., **Goodrick, S.L.** 2005. Modeling effects of atmospheric stability on wildfire behavior. Sixth Symposium on Fire & Forest Meteorology and the 19th Interior West Fire Council Meeting, October 25-27, Canmore, Alberta, Canada. Sponsored by the American Meteorological Society [Abstract]

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Sanchez, Felipe, Coleman, M., Garten, C.T., Luxmoore, R., **Stanturf, J.A**., Wullschleger, S.D. 2005. Soil carbon, after three years, under short rotation woody crops grown under a range of nutrient and water availability. Soil Science Society of American Annual Meeting, 6-10 November, Salt Lake City, Utah [Abstract]

Stanturf, J.A., Burbridge, P.R., Gardiner, E.S., Perdue, J.H. 2005. Disturbance in the face of climate change: Incorporating disturbance into management of coastal forests. International Workshop on the Scale of Natural Disturbances from Tree to Stand; 29 September to 1 October, Palanga, Lithuania; Lithuanian Forest Research Institute, Kaunas, Lithuania. [Abstract]

Photos from the Masthead: Measuring tools used by field crews

(a) (b) (c)
(d) (e) (f)
(g) (h) (i)

(a) Diameter Tape (b) Drip Torch (c) Measuring Tape
(d) Fire Rake (e) Fire Weather Instrument (f) Increment Borer
(g) Laser Vertex Hypsometer (h) Plant Press (i) Tally Counter

Upcoming Events:

2006

May 21-24 Challenges in Coastal Hydrology and Water Quality, Baton Rouge, Louisiana; http://www.cee.lsu.edu/facultyStaff/Singh_Vejay/index.html

May 31-Jun 2 Workshop on "Critical Processes and Properties Regulating Carbon Cycling in Southern Forests," Southern Forest Research Partnership, Asheville, NC; http://sfrponline.net/events.htm

Jun 3-8 12th International Symposium on Society and Natural Resource Management, Vancouver, BC, Canada; http://www.issrm2006.rem.sfu.ca

Jun 5-9 Fourth International Poplar Symposium, "Meeting the Needs of a Growing World through Poplar and Willow Science: Combining Traditional and Novel Approaches in the Genomic Era," Nanjing, China, IUFRO Poplar and Willow Working Party 2.08.04; http://ips2006.njfu.edu.cn/

Jun 13-15 Forest Service National Invasive Species Conference, Denver, Colorado; http://fsweb.wo.fs.fed.us/invasivespecies/events/conference2006/index.shtml

Jul 18-20 Advances in Threat Assessment and Their Application to Forest and Rangeland Management, Boulder, Colorado; http://www.forestencyclopedia.net/encyclopedia/threats

Jul 9-15 18th World Congress of Soil Science, in Philadelphia, PA http://www.18wcss.org

Jun 26-28 AWRA 2006 Summer Specialty Conference, Adaptive Management of Water Resources; Missoula, MT; http://www.awra.org/meetings/Montana2006/index.html

Aug 2-4 Southern Regional Conference on Forestry Technology Transfer and Science Delivery, Little Rock, Arkansas; http://sref.info/2006/techtransfer

Aug 6-11 Eighth International Conference on Mercury as a Global Pollutant Madison, WI; http://www.mercury2006.org/ ; DiCosty to attend and present paper

Aug 6-11 Ecological Society of America annual meeting, Memphis, TN; http://www.esa.org/memphis/

Aug 8-10 Forest and Water in a Changing Environment Beijing, China; Chinese Academy of Forestry, Beijing Forestry University and Southern Research Station.

Aug 22-25 5th European Conference on Ecological Restoration: "Land use changes in Europe as a challenge for restoration ecological, economical and ethical dimensions" University of Greifswald, Germany http://www.uni-greifswald.de/SER2006

Aug 28-Sep 1 IEA Bioenergy Task 29, Task 31 and Task 39, International Workshop "Biofuels and Bioenergy: Challenges and Opportunities," University of British Columbia, Vancouver Canada; http://www.ieabioenergytask31.org/

Sep 11-14 Baltic-Scandinavian Disturbance Network annual meeting, Tromsø, Norway with field excursions to Lapland in Finland (Alta, Lakselv and Kilpisjärvi); http://www.eau.ee/~ecosyst/index.php?page=coming

Sep 25-28 2006 biennial meeting Short Rotation Woody Crops Operations Working Group, Red Lion Inn, Pasco, Washington; tentatively, joint meeting with Poplar Council of Canada, US Poplar Council, IUFRO Temperate Short Rotation Forestry Working Party 1.03.02, and SAF Agroforestry Working Group;

Sep 25-27 UFRO Oak Silviculture Working Party (1.06) meeting, Stevens Point, WI; optional pre-conference field trip to SW WI on Sept 21-23, and optional post-conference tour to northern WI on Sept 28-30.

Sep 26-19 Patterns and Processes in Forest Landscapes; Consequences of Human Management, University of Bari, Italy; IUFRO 8.01.03 Landscape Ecology; http://www.greenlab.uniba.it/events/iufro2006/

Oct 4-7 IUFRO and EFI International Meeting, "Ecosystem Goods and Services from Planted Forests," Bilbao, Spain; http://www.iefc.net

Oct 10-13 Conference on "Sustainable Forest Management with Fast Growing Plantations", Charleston, SC; contact Dave Wear dwear@fs.fed.us

Oct 25-29 Society American Foresters Annual Meeting, Pittsburgh, PA

Oct 23-27 Knowledge management in forestry conference, sponsored by KnowForAlp, hosted by Forest Research Institute Baden Württemberg, Freiburg, Germany

*Nov 8-9 National Agenda 2020 Forest Productivity and Technology Workshop, Washington, DC

Nov 12-16 Soil Science Society of American Annual Meeting, Indianapolis, IN; http://www.indy.org

Nov 13-17 3rd International Fire Ecology and Management Congress, San Diego, CA; http://emmps.wsu.edu/firecongress/

Nov 14-16 SRS Management Team Meeting, joint with Region 8; Atlanta.

2007

Feb 26-Mar 1 14th Biennial Southern Silvicultural Research Conference, Athens, GA;

*May 13-17 4th International Wildland Fire Conference, Sevilla, Spain; http://www.fire.uni-freiburg.de/course/meeting/2007/meet2007_01.htm

May 14-18 IUFRO Forest Landscape Restoration Conference, Seoul, South Korea; venue is COEX in Seoul; http://www.coex.co.kr/

*May? North American Forest Biology Workshop, hosted by the Hard wood Tree Improvement and Regeneration Center, Purdue University; http://www.agriculture.purdue.edu/fnr/HTIRC/

*Jun 6-8 EastFire II Conference, George Mason University, Fairfax, VA; http://eastfire.gmu.edu/temp/eastfirewatch/conference.htm

Summer 6th North American Forest Ecology Workshop, to be held in British Columbia

Oct 24-28 Society American Foresters Annual Meeting, Portland, OR.

Nov 4-8 Soil Science Society of American Annual Meeting, New Orleans, LA; http://www.neworleanscvb.com

Upcoming Events:

2008

Nov 5-9 Society American Foresters Annual Meeting, Reno, NV.

2009

World Forestry Congress, Buenos Aires, Argentina

New SRS Organization is comprised of five Science Areas.

GPRA GPRA GPRA GPRA GPRA GPRA

GPRA -Accomplishment

Category	FY 2004 Total	FY 2005 Total	FY 2006 To Date
Number of Refereed Journal Publications	20	21	18
Number of Non-Refereed Publications (include abstracts)	89	60	36
Number of Publications (refereed + non-refereed)	109	81	54
Number of Tours	41	40	27
Number of Short Courses/Training	20	13	20
Number of Invited Presentations to Scientific Organizations	12	7	16
Number of Invited Presentation to Lay Organizations	30	32	22
Volunteer Presentations to Scientific Organizations (non-GPRA	42	50	19
Number of Technology Transfer Activities (other than above)	105	132	68
Outside Funding	$2,610,574	$3,688,734	$1,852,253

SRS-4104 Project Leader's Report

John Stanturf - Editor Lynne Breland - Technical Writer
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